

**PACIFIC GAS AND ELECTRIC COMPANY
2013-2014 ENERGY EFFICIENCY PORTFOLIO
PROGRAM IMPLEMENTATION PLAN
STATEWIDE PROGRAM
EMERGING TECHNOLOGIES
PGE2106**

APRIL 23, 2013

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- 1) Emerging Technologies Program (ETP), PGE2106, core program
- 2) Total Program Budget Table (including 2010-2012 Carryover Funding)

	Direct Implementation	Admin.	Marketing & Outreach	Total 2013-2014 Budget	2010-2012 Carryover
Technology Development Support	\$744,668	\$82,413	\$7,221	\$834,302	\$294,000
Technology Assessments	\$5,106,296	\$565,115	\$49,515	\$5,720,925	\$2,016,000
Technology Introduction Support	\$4,787,152	\$529,795	\$46,420	\$5,363,368	\$1,890,000
Total *	\$10, 638,116	\$1,177,323	\$103,156	\$11,918,594	\$4,200,000

*Note: Administrative costs in addition to exhibited program element costs. Funding for activities, operations, and projects previously funded under program elements Market and Behavior Studies, Scaled Field Placements, Demonstration Showcases, Business Incubation Support, and Program Management & CPUC Reporting have been distributed to the three ET subprograms. Per 2013-2014 portfolio guidance decision, HVAC Technologies and Systems Diagnostics Advocacy (HTSDA) will be incorporated into ETP.

A planning budget (without carryover) breakdown as per the guidance decision is included in Appendix 1.

** Outreach efforts are part of the direct implementation budget.

3) Program Mission

The mission of the Emerging Technologies Program (ETP) is to support “increased energy efficiency market demand and technology supply” (the term supply encompassing breadth, depth, and efficacy of product offerings) by contributing to development, assessment, and introduction of new and underutilized energy efficiency (EE) measures (that is, technologies, practices, and tools), and by facilitating their adoption as measures supporting California’s aggressive energy and demand savings goals.

Increased market demand and increased technology supply are reinforcing effects – each working to spur the other. As market demand increases, market-pull leads to technology supply increases. As technology supply increases, changes in perceptions and attitudes, work to stimulate increased market demand.

Increased market demand works to address energy efficiency goals in both the near term and longer term. In the near term, increased market demand will lead to higher adoption rates of currently available energy efficiency measures. Market demand can be increased by either reducing barriers to adoption or through increasing incentives to adopt. In either case, as barriers (disincentives) shrink relative to incentives, adoption rates will grow. One example of a barrier to EE measure adoption is performance uncertainty, where an incentive example is environmental concern.

A longer-term effect of increased market demand for EE measures is the spurring of market pull for yet-to-be-developed EE measures. Generally, market-pull product development usually takes place when some specific need is discovered in the marketplace that currently is either being ignored, not well served, or just not recognized. As technology developers become aware of unmet consumer needs for EE measures, development will be undertaken to fulfill those needs in the future. Market pull created by increased market demand will result in longer-term increases in technology supply.

Increased technology supply also works to address energy efficiency goals in both the near term and longer term. In the near term, increased technology supply will lead to more EE measure adoption at current levels of market demand. Factors contributing to this increase would be more applications for which EE measures are available, lower prices due to competition, and increased measure effectiveness. Technology can generally be increased through improving incentives to invest in new measures or decreasing the difficulty of developing and launching new measures. In either case, as difficulty shrinks relative to incentive, development of new technology supply will grow. One example of decreasing the difficulty of developing an EE measure could be a pre-existing testing protocol. An example of incentive to invest in a new technology could be a building code driving future customer purchases.

A longer-term effect of increased technology supply of EE measures is the development of future market demand. Generally, as breadth, depth, and efficacy of available products in a new market segment increases, consumer perceptions and attitudes will change. Items previously viewed as niche become more mainstream. Energy usage considerations will become a more expected aspect of the products consumers purchase. In this way, increases in technology supply will result in longer-term increases in market demand.

By advancing these Goals and Objectives, the ETP supports California's energy and demand savings targets as defined by the following regulatory and legislative documents:

- The Energy Efficiency Rulemaking 09-11-014 providing guidance for 2013-2014 portfolios (2013-2014 Decision)
- The 2010-2012 Energy Efficiency (EE) Application 08-07-021, et al. and related CPUC guidance in Rulemaking 06-04-010.
- The California Long-Term Energy Efficiency Strategic Plan (Strategic Plan), with particular focus on the big and bold initiatives in the domains of residential and commercial zero net energy (ZNE) buildings, HVAC industry transformation, as well as lighting innovation

The California Global Warming Solution Act of 2006 (Assembly Bill 32).

The ETP will leverage all complementary efforts and entities in support of its mission, including other Statewide and local IOU EE programs; and EE innovation activities by

external organizations such as private industry, industry trade organizations, corporate laboratories, CEC Energy Research & Development Division (ER&DD), U.S. DOE and national laboratories, and regional, national and international ETP partners including utility, academia, non-governmental organizations, and other market stakeholders.

Section 4 of this implementation plan describes the rationale for and expected outcome from the ETP in relation to market and technology barriers and the Strategic Plan. Three sub-program elements central to the ETP's ability to address its mission and achieve its goals and objectives are also described in Section 4 below. These sub-programs drive the process of evaluating the application of energy-saving measures in real-world settings and building a pipeline of measures to consider for deployment through utility EE programs.

4) Program Rationale & Expected Outcome

California consumers report they are eager for solutions to climate change and other environmental issues, and California's investor-owned utilities (IOUs) have implemented a vast array of programs to support the purchase and use of EE measures. Many of these programs have seen tremendous success, yielding energy and demand savings that have reduced the need for new generation, transmission, and distribution facilities, lowered ratepayer energy bills, and avoided tons of greenhouse gas emissions.

To meet California's ambitious EE goals, new measures must be added to ensure program success in 2013-2014, and beyond. However, a host of market barriers can delay new measure introduction and adoption. Delayed adoption in turn diminishes, slows, or even eliminates the potential energy and environmental benefits of new measures, as well as the attractiveness of investing in and developing these measures.

To achieve success, the ETP will focus its operations on three core sub-programs. Each of the sub-programs is briefly presented within this section (Section 4) of the program implementation plan. Note: With the experience gained from implementing the 2010-2012 program, it becomes clear that the 2010-2012 program "elements" are better understood as *tactics*, or tools, that can be utilized to address more than one ETP Goal; there is not a one-to-one mapping of tactic to Goal. A tactic or a set of tactics may be applied in coordination to advance overall ETP goals. Accordingly, the descriptions of the old elements have been refreshed for 2013-2014 to reflect broader program elements. Please see Table 2 for a depiction of how the 2010-2012 elements have been distributed. Please also refer to each section's subheading for the updated 2013-2014 categorization of these approaches. For readers already familiar with the 2010-2012 ETP, we recommend you start reading at Section 5. "Program Goals, Objectives, Action Strategies & Performance Metrics".

1. Technology Development Support (TDS)
2. Technology Assessments (TA)
3. Technology Introduction Support (TIS)

Table 2. Mapping of the 2010-2012 “elements” into the new 2013-2014 sub-programs

2013-2014 Subprogram	Goal	*Merged 2010-2012 ETP “Elements”
Sub-program #1 Technology Development Support Subprogram	Increased EE technology supply (Support the development of new technologies)	- Technology Development & Support - TRIO - Market Studies and Behavioral Studies
Sub-program #2 Technology Assessments Subprogram	Increased number of measures offered by EE programs (Identify promising technologies for EE programs)	- Technology Assessments - Demonstration Showcases - Market Studies and Behavioral Studies - Technology Test Center (SCE only)
Sub-program #3 Technology Introduction Support Subprogram	Support technology introduction and whole-building deep-energy reduction solutions (“Seed” market demand among targeted end users)	- Scaled Field Placements - Demonstration Showcases - TRIP Solicitations (implemented in 2012 by SCE only. New to ETP in 2013-2014) - Market Studies and Behavioral Studies

* HVAC Statewide Program’s HTSDA Subprogram has been integrated in to the ETP program in 2013-2014 and will be implemented in the new three ETP subprograms.

The ETP has established three goals and seven objectives as the means to achieve its mission. Section 5 of this PIP elaborates these goals in detail.

ETP Goal#1: Increased EE technology supply

ETP Objective 1.1: Support technology development

ETP Objective 1.2: Conduct technology developer outreach through TRIO

ETP Goal #2: Increased number of measures offered by EE programs

ETP Objective 2.1: Perform Technology Assessments

ETP Objective 2.2: Transfer measures into EE programs

ETP Goal #3: Support technology introduction and whole-building deep-energy reduction strategies

ETP Objective 3.1: Conduct field deployments

ETP Objective 3.2: Conduct technology demonstrations

ETP Objective 3.3: Conduct Technology Resource Innovation Program (TRIP)
Solicitations

Table 3 highlights the various parameters to highlight the distinctions between the new three ETP subprograms for 2013-2014.

Table 3. Distinction Between ETP Subprograms

<i>Parameter</i>	Technology Development Support	Technology Assessments	Technology Introduction Support
<i>Purpose</i>	specifications, outreach → mid- to long-term EE technology supply	performance, cost data, market potential → EE programs	market exposure
<i>Theme</i>	spur technology development	evaluation	first-hand experience/Exposure
<i>Units installed</i>	none to one lab evaluation in some cases	one to a few (exceptionally, many) or entire floor/building/facility	a few to many (or entire floor/building/facility)
<i>Number or sites</i>	none to one	one to a few (exceptionally, many)	one to a few (exceptionally, many) as strategically valuable
<i>Unique measures</i>	one up to whole system	one up to whole system	one up to whole system or whole building
<i>Customer involvement</i>	none	one or a few users	few to many users or viewers
<i>Duration</i>	short to medium	medium to long	as needed (typically long)
<i>Data collection</i>	detailed	detailed	none to moderate
<i>Preferred Dissemination mechanism</i>	printed report, outreach, & other media	printed report & other media	printed report & other media along with first-hand experience and word of mouth

a) Program Design to Overcome Barriers

The ETP focuses on four priority market and technology barriers:

- A. **Information or search costs** - the value of time spent identifying, learning about, and locating EE measures.
- B. **Performance uncertainties** – the difficulties and costs of acquiring the information needed to evaluate performance claims for EE measures.
- C. **Organizational practices or customs** – behavior by companies, departments, professional groups, and government entities that has been institutionalized and may discourage forward thinking and proactive implementation of EE measures.
- D. **Product or service unavailability** – limited supply and/or distribution of EE measures. For instance, a customer may want to buy task lights using solid-state lamp technology, but finds that vendors and distributors cannot meet the customer's volume requirements or other specifications.

In addition, other EE programs and market factors will have responsibility for, and ETP will contribute to, actions to overcome the following customer barriers.

- **Hidden costs** – unexpected costs emerging after the initial decision to implement an EE measure. For instance, a hidden cost under the Big Bold strategies would be the expense of training contractors on new types of lighting or HVAC measures.
- **Asymmetric information and opportunism** – concerns about reliability/applicability of measure developer and vendor claims. Collaborating with the work of universities and technical information providers, such as E Source, the ETP can act as a resource to assist EE programs in addressing these claims.

The statewide IOUs' revision of the ETP scope for 2013-2014 to include three sub-programs represents a response mindful of insights from previous ETP program years and past ETP EM&V studies. The IOUs will utilize these sub-program elements in a comprehensive effort to address the range of EE market barriers that ETP can either influence directly or through efforts supporting other EE and IDSM programs. Following are descriptions of the 2010-2012 six ETP elements and how they have been re-characterized as sub-programs in 2013-2014. Descriptions include supporting rationale, how each contributes to overcoming one or more market or technology barriers, and expected outcomes.

1. Technology Assessments

Subprogram – (2013-2014: Changed to Subprogram #2; please see Table 2)

- a. Description - Energy efficient measures that are new to a market or underutilized for a given application will be evaluated for performance claims and overall effectiveness in reducing energy consumption and peak demand.

ET assessments may utilize data/information from different sources including: in situ testing (customer or other field sites), laboratory testing, or paper studies may be used to support assessment findings. In addition to other findings and/or information, assessments typically would generate the data necessary for EE rebate programs to construct a work paper estimating energy and demand savings over the life of the measure.

Assessment proposals are screened prior to an assessment being initiated. The screening process considers:

- The measure's alignment with EE program strategy and Strategic Plan goals.
- The measure's projected magnitude of contribution towards kWh, kW and therm reduction and/or Strategic Plan goals. This includes both the effectiveness of an individual measure and the potential number of adopted measures.
- The degree to which the assessment output will incrementally impact the measure's adoption rate.
- Information necessary to be generated for EE program inclusion and the effectiveness of an assessment in producing this information.
- Resources (expense, labor) necessary to execute the assessment.

To ensure that technology lab assessments can be conducted properly, state-of-the-art test facilities staffed with knowledgeable engineers and scientists will be available to ETP project managers. These facilities will be focused toward broad initiatives like zero net energy, as well as specific end-uses, such as refrigeration, lighting, water heating, and air conditioning. PG&E ZNE Lab and ZNE Demo Home is dependent on approval of 2011 GRC funding. In all respects, they will allow independent verification of performance claims and quantification of energy and demand savings.

- b. Rationale - The assessment function is a contributor to the transfer of promising measures into the utility portfolio.
- c. Barriers addressed – Assessments address Information or Search Costs, Performance Uncertainties, Organizational Practice or Customs, as well as contributing to efforts by others to overcome Hidden Costs and Asymmetric Information and Opportunism.

For instance, assessment reports reduce the time that IOU customers must spend looking for and confirming the performance of EE measures – either directly when the customer reads the ETP report, or indirectly, when the customer receives education or marketing material through EE channels based on ETP assessment findings.

Similarly, ETP communications on measures that are being transferred or have been transferred to EE programs will assist companies, departments, and governmental entities in understanding EE measures' actual performance thereby breaking down barriers to proactive implementation.

- d. Expected outcomes – Technology assessments will contribute to increased measure awareness, market knowledge and reduced performance uncertainties for ETP stakeholders and IOU customers. Studies will aid in the acceptance and adoption of new technologies, especially those technologies which will be used in EE portfolios. This will lead to changes in organizational practices and customs that may otherwise limit EE measure procurement and application.

Technology assessments will also contribute to increased and improved technology supply, leading to further reductions in market barriers, increased intent to purchase/employ measures, and more EE rebates issued. Over time, they will support increasing use of measures by customers, aiding EE programs in achieving energy and demand savings targets, and meeting long term Strategic Plan and policy objectives.

2. Scaled Field Placements

(2013-2014: no longer a sub-program, but considered one of many possible “elements” to support Subprogram #3, Technology Introduction Support. Please see Table 2).

- a. Description - These projects consist of placing a number of measures at customer sites as a key step to gain market traction and possibly gain market information. The measures will typically have already undergone an assessment or similar evaluation to reduce risk of failure. While the number of units in scaled field placements will vary widely, numbers typically larger than in an assessment of the technology are expected. A very simple example of a scaled field placement would be to give 50 office managers an LED task light. Monitoring activities on each scaled field placement will be determined as appropriate.
- b. Rationale - Scaled field placements work under the premise that end-users or stakeholders with adoption influence (installers, builders, and procurement officers) will be positively influenced by first-hand experience utilizing a measure and that this first-hand experience will lead to future measure purchases/use. This method of influence is fundamentally different from assessments that influence through information dissemination via a report or other results media.

Scaled field placements will be most effective when:

- The stakeholder gaining exposure has the potential to influence a large number of future purchases/uses. Example: Placing a high-efficiency air conditioning unit with several large HVAC contractors. “Potential to influence” is a broad term. Influence of the participant stakeholder could stem from purchase decision power, high frequency of interactions with other potential adopters, or status as a thought leader.
 - First-hand experience is projected to be more influential for a measure than less costly dissemination mechanisms such as printed information or media. Technology complexity and concern regarding human factors are potential causes for first-hand experience to be more influential than printed media. Example: Placing energy efficient retail lighting at a WalMart, Target, and Home Depot store.
- c. Barriers addressed – Scaled field placements address Information or Search Costs, Performance Uncertainties, Organizational Practice or Customs, as well as contributing to efforts by others to overcome Hidden Costs and Asymmetric Information and Opportunism.

For instance, scaled field placements reduce the time that large-scale decision makers and decision influencers must spend looking for and confirming the performance of EE measures – as first-hand experience eliminates these needs.

- d. Expected outcomes – Scaled field placements will contribute to increased measure awareness, market knowledge and reduced performance uncertainties for ETP stakeholders and large scale customer decision makers and decision influencers. This will lead to changes in organizational practices and customs that may otherwise limit EE measure procurement and application.

Scaled field placements can also contribute to a market tipping point, in which an influential buyer or decision maker responsible for large volume purchase decides to specify the EE measure – thus creating a spike in market demand and exposure for many people who experience the measure once it is implemented. Over time, scaled field placements may support increasing use of measures by customers, aiding EE programs in achieving energy and demand savings targets, and meeting long term Strategic Plan and policy objectives.

3. Demonstration Showcases

(2013-2014: no longer a sub-program, but considered a “elements” that can support multiple sub-programs as needed. Please see Table 2).

- a. Description - These possibly large-scale projects will expose measures to various stakeholders utilizing in situ, real-world applications and installations. Monitoring

activities on demonstration showcases will be determined as appropriate. For instance, a demonstration showcase for ZNE residential or commercial new construction or for a ZNE existing building could take a form similar to projects performed as part of the Advanced Customer Technology Test for Maximum Energy Efficiency (ACT2) project in California 1990, creating broad public and technical community exposure. Another example would be a demonstration showcase residential or commercial building highlighting LED lighting technologies to create visibility and market awareness for building contractors, architects, and electricians.

Key attributes of a demonstration showcase is that it is open to the public or to an interest group (for example, a super low energy data center that is open to data center industry professionals), that many viewers are encouraged to visit, and that may highlight a systems approach rather than an individual measure (this last point is optional, as in the case of the previously cited LED lighting showcase). The actual number of customers or viewers exposed to the showcase will depend on the technologies being demonstrated, market segment and other variables.

- b. Rationale – Demonstration showcases provide a unique opportunity for measures and systems to receive broad exposure, and for numerous visitors to “kick the tires” or at least experience the measure in an informal, real-world setting.

The combination of large numbers of customers and other stakeholders experiencing the measure with the opportunity to return to the showcase with friends, family, and professional associates, creates a powerful “conversion” experience that enhances diffusion and market penetration. Note that this is very different from the experience of being marketed to or being sold the measure in a purchasing environment.

- c. Barriers addressed – Demonstration showcases address Information or Search Costs, Performance Uncertainties, Organizational Practice or Customs, as well as contributing to efforts by others to overcome Hidden Costs and Asymmetric Information and Opportunism.

For instance, demonstration showcases reduce the time that IOU customers must spend looking for and confirming the performance of EE measures – either directly when the customer visits the demonstration showcase site, or indirectly, when the customer receives educational or marketing material through word of mouth or EE channels.

Similarly, in-person exposure, word-of-mouth, media or ETP / EE communications on demonstration showcase features, performance, and impressions will assist representatives of companies, departments, and governmental entities in gauging EE measures’ actual performance thereby breaking down barriers to proactive implementation.

- d. Expected outcomes – Demonstration showcases will contribute to increased measure awareness, market knowledge and reduced performance uncertainties for ETP stakeholders and IOU customers. This will lead to changes in organizational practices and customs that may otherwise limit EE measure procurement and application.

Demonstration showcases, like scaled field placements, can contribute to a market tipping point, in which one or more influential “connectors” or “mavens” experiences and recommends the EE measure to many friends and colleagues – thus creating a spike in market demand and exposure for many more people who experience the measure once it is implemented. Over time, they will support increasing use of measures by customers, aiding EE programs in achieving energy and demand savings targets, and meeting long term Strategic Plan and policy objective.

4. Market and Behavioral Studies

(2013-2014: no longer a sub-program, but considered a “element” that can support multiple sub-programs as needed. Please see Table 2).

- a. Description – These projects involve targeted research on customer behavior, decision making, and market behavior to gain a qualitative and quantitative understanding of customer perceptions, customer acceptance of new measures, and market readiness and potential for new measures.

Studies may involve primary research such as studies of potential measure impacts and barriers, market segment needs and gaps, technology performance gaps, pre-studies to qualify potential measures and sites for scaled field placements and demonstration showcases, measure usability studies, long-term market potential studies for the ETP, and the like.

Specific examples of primary market and behavioral research could include:

- user feedback gathered on high-efficiency HVAC units at big-box stores
- ethnographic studies to see how automated building system diagnostic applications would fit into daily operations at customer site
- lab-based observational studies of user behavior while using LED task lighting under controlled conditions
- usability studies for home energy monitoring and control systems
- survey-based discrete choice analysis of features that customers prefer in high-efficiency appliances or industrial process controls.

Studies may also include secondary research based on the wealth of studies being conducted in the rapidly growing energy behavior field.

- b. Rationale - Measure adoption is often impacted by customer/market perception and acceptance. Market and behavioral analysis may identify potential barriers to adoption early in the process. Results can provide crucial insights at multiple points in technology development, assessment justification, and transfer to and deployment by EE programs. Additionally, market and behavioral studies may be executed independently of a specific measure where this information is valuable to identify new markets or segment opportunities, or to advance one or more of the ETP objectives in other ways.
- c. Barriers addressed – Market and behavioral studies address Information or Search Costs, Performance Uncertainties, Organizational Practice or Customs, as well as contributing to efforts by others to overcome Hidden Costs and Asymmetric Information and Opportunism.

For instance, market and behavioral study reports reduce the time that IOU customers must spend looking for and confirming the human factors performance aspects of EE measures – either directly when the customer reads the ETP report, or indirectly, when the customer receives educational or marketing material through EE channels based on ETP market and behavioral study findings.

Similarly, ETP communications about market and behavioral studies for measures that are being transferred or have been transferred to EE programs will assist companies, departments, and governmental entities in understanding EE measures' actual performance, including human factors, breaking down barriers to proactive implementation. They can also help product developers and manufacturers identify and target unmet customer needs, thus enabling development and deployment of new or better products such as efficient consumer electronics or CFLs that better meet customer expectations.

- d. Expected outcomes – Market and behavioral studies will contribute to increased measure awareness, market knowledge and reduced performance uncertainties for ETP stakeholders and IOU customers. This will lead to changes in organizational practices and customs that may otherwise limit EE measure procurement and application.

Market and behavioral studies will also contribute to increased and improved technology supply leading to further reductions in market barriers, increased intent to purchase/employ measures, and more EE rebates issued. Over time, they will support increasing use of measures by customers, aiding EE programs in achieving energy and demand savings targets, and meeting long term Strategic Plan and policy objectives.

5. Technology Development Support
(2013-2014: Merged into Subprogram #1, see Table 2)

- a. Description - The ETP will look for targeted opportunities to support energy efficiency product development. Product development is the process of taking an early-stage technology or concept and transforming it into a saleable product. (Early-stage technologies are often the output of R&D work, hence product development bridges the gap between R&D and the market.) An example of an early-stage technology is a light-emitting diode. The product development process has resulted in televisions, computer monitors, illuminated signs, and lighting fixtures.
- b. Rationale - Product development is best performed by private industry. There are opportunities, however, where the IOUs are well qualified or in a strong position to undertake targeted, cost-effective activities which provide value in support of private industry product development efforts. (Examples of activities may include providing customer contacts for field evaluations, making lab testing facilities available to companies without this capability, or developing standard testing protocols. See Section 5, Goal #2, Objective 2.1 for a complete description of potential opportunities.)

California has a vested interest in seeing EE products create positive impressions on consumers in the areas of performance and quality, as consumers may project a poor experience with one EE measure onto other EE measures. Technology development support can aid these efforts.

As private industry is generally best positioned to perform product development, it is important during the screening process to establish the incremental value-added of these ETP activities for these opportunities. Attributes of potential opportunities which would lead to ET / IOU efforts being most necessary, cost-effective, and/or impactful are as follows:

- Opportunity involves issuing rebates or setting rebate program requirements.
 - Opportunity involves a cost (capital, labor, or expense), the resulting benefit of which would be shared by multiple stakeholders. (Example: making certain expensive pieces of equipment available to test targeted technologies in development by small companies.)
 - Opportunity involves an investment of funds or resources, said investment being justified from the perspective of the ET mission, but being unattractive when viewed by a single technology developer. (Example: developing a hot-dry AC testing protocol.)
 - Opportunity involves knowledge, equipment, information, or facilities that are very specific to the business of the IOU and may not be easily attainable by private industry without the IOU help. (Example: Non-private IOU customer data.)
- c. Barriers addressed – Technology development support focuses primarily on Product or Service Unavailability. It also helps overcome Organizational Practices or

Customs by guiding a new measure to market that is tailored to specific segment or business needs. Finally, it may address Hidden Costs, a secondary market barrier for ETP, by assisting in development of a measure that minimizes maintenance or installation costs that would otherwise hamper adoption.

- d. Expected outcomes – Technology development support will contribute to increased readiness and availability of EE measures for customers and EE program managers and reduced uncertainties for program participants. It also contributes to engagement in product development decision-making by ETP stakeholders and large-scale customer decision makers and decision influencers. This will lead to changes in organizational practices and customs and can lead to reduced maintenance and installation costs that may otherwise limit EE measure procurement and application.

The increased and improved technology supply due to technology development support will also lead to further reductions in market barriers and increased intent to purchase/employ measures. Over time, this will support increasing use of measures by customers, aiding EE programs in achieving energy and demand savings targets, and meeting long term Strategic Plan and policy objectives.

6. Business Incubation Support

(2013-2014: no longer a sub-program, but considered a “element” that can supports all sub-programs as needed; please see Table 2).

- a. Technology Resource Innovation Outreach (TRIO) is a statewide program that focuses on providing training and networking for entrepreneurs and companies providing energy saving technologies.
- b. Rationale - During a solicitation process review by the PRG in late 2006, it was mentioned that the utilities need to generate new innovative program ideas “through more outreach and non-traditional methods.” In response to this request, more outreach was conducted via investor forums, university settings, and solicited abstracts. Venture capitalists (VC) were notified of the potential TRIO program and were very interested in technologies that had a utility interest. The VCs were interested in learning how to do business with the utilities, what the utilities expected from entrepreneurs, how to utilize the utility emerging technologies department, and how to go about getting a purchase order with an IOU.

From this research the IOUs concluded that more outreach and non-traditional methods to generate new ideas could be generated by providing training workshops and mentoring on participating in IOU programs and the IDMS business environment.

TRIO is designed to accelerate the successful development of technologies through an array of engineering support, resources and services, developed and orchestrated by TRIO and offered both in the incubator and through its network of contacts. There

will be significant coordination with existing clean tech programs (such as the California Cleantech Open and various cleantech business clusters) throughout California.

- c. Barriers addressed - Business incubation support focuses primarily on Product or Service Unavailability. It supports and accelerates market introduction for new measures (increased technology supply), and a particular form of Information and Search Costs for businesses seeking to obtain recognition in IOU incentive and educational programs as part of their business model. It also helps overcome Organizational Practices or Customs by guiding new measures to market that are tailored to specific segment or business needs.
- d. Expected outcome – Business incubation support will engender improved understanding of utility programs as well as of technology and business performance and market requirements for small entrepreneurs or large enterprises seeking to develop and/or introduce new EE and DR measures successfully into the market. It will reduce uncertainties for program participants, increase the readiness and availability of EE and DR measures, and increase participation in TRIP solicitations as well as in EE incentive and education programs.

Business incubation support will also contribute to increased and improved technology supply over the mid- and long-term, leading to reductions in other market barriers, increased intent to purchase / employ measures, and more EE rebates issued. Over time, it will support increasing use of measures by customers, aiding EE or IDSM programs in achieving energy and demand savings targets, and meeting long term Strategic Plan and policy objectives.

d) Advancing Strategic Plan goals and objectives

The ETP fully supports the goals, strategies and near-term plans of the Strategic Plan. This support will be demonstrated through both: a) the types of technologies that are selected for the ETP, and b) the approach that is employed to address longer term goals of the strategic plan by having a well-diversified portfolio of technologies under development, assessment, or deployment.

A key step that the IOUs are taking to increase ETP impact in support of the Strategic Plan is strengthening the linkages and feedback loops between ETP and other EE programs, as well as with leading market actors, to help advance development and implementation of new measures that support the Strategic Plan goals and strategies for Research and Technology, the Big, Bold initiatives, and related solutions such as advanced lighting measures.

These linkages and feedback loops incorporate key EE, IDSM, and other IOU competencies such as EM&V, market research, behavioral, and potential studies, marketing, training, and regulatory support to ensure the deployment of new measures

supporting the Strategic Plan will receive the full benefits of the IOUs' enterprise-wide resources.

The ETP organizational linkages and feedback loops will ensure a more cohesive approach to delivery of ET products that in turn will lead to greater success in measure introduction, market adoption, and the overarching goal of energy savings. These linkages and feedback loops are further described in Section 6 below.

Furthermore in support of the Strategic Plan's goals and pursuant to the 2013-2014 guidance decision, the HVAC's Technologies and System Diagnostics Advocacy (HTSDA) 2010-2012 activities will be incorporated into ETP's goals and objectives.

The vision is to make a difference in the HVAC industry by addressing equipment reliability, performance, and integration/application challenges, in alignment with California's energy policies (i.e., California's Strategic Plan and SCE's goals. These efforts will ensure that residential and light commercial HVAC technologies, installations, and maintenance practices are of the highest quality, and optimized for California's varying climates. These efforts are focused on coordination and advocacy that addresses the priority need for immediate and comprehensive action addressing elements critical to increasing, optimizing and maintaining the energy and peak electricity efficiency performance of direct expansion (DX)/vapor-compression-based cooling equipment and accelerating the market introduction of a range of advanced evaporative-based climate appropriate cooling technologies as well as. Research/advocacy supporting automated fault detection and diagnostic maintenance procedures. Efforts include unprecedented participation by HVAC industry stakeholders in research, development, and design, continuous review and updating, and operation of HVAC-related IOU programs. This unprecedented cooperation and collaboration with the HVAC industry has the purpose of substantially advancing HVAC-related program quality and effectiveness.

5) Program Goals, Objectives & Action Strategies

ETP operations will apply the three sub-programs described in Section 4 to achieve the ETP goals, objectives, and action Strategies.

- ETP Element 1 - Technology Development Support
- ETP Element 2 - Technology Assessments
- ETP Element 3 - Technology Introduction Support

Each ETP sub-program corresponds to one of the three ETP Goals. In high-level terms, the ETP Goals are to increase adoption of measures (market demand), to increase measure supply (technology supply), and to advance Strategic Plan Big and Bold goals and related integrated energy solutions.

These approaches are complementary and reinforce each other by helping new measures become available in the market and gain stronger market traction sooner than otherwise possible. Collectively, they contribute with other EE programs and with interventions by non-utility market actors to market transformation efforts aimed at increasing the adoption of EE measures in California, nationwide and internationally.

Actions that increase market demand (ETP Goal 1) make developing and launching new measures less expensive, less risky, and generally more attractive to manufacturers and vendors seeking to increase sales and profitability. This increased market demand inherently drives increased technology supply.

Actions that increase technology supply by resulting in more high-quality EE measures in the market (ETP Goal 2) encourage existing entrepreneurs and attract new ones to form or join enterprises in the EE market. These actions also attract progressive policy makers, consumers seeking financial and intangible benefits, and investors and others willing to fund innovative measures. This increased technology supply inherently drives increased market demand.

Actions supporting Strategic Plan Big and Bold goals and related solutions (ETP Goal 3) combine market demand and technology supply approaches. All actors involved in creating technology supply and market demand benefit from interventions by the ETP and complementary efforts.

ETP Goal #2 (2013-2014 Goal #2: Increased number of measures offered by EE programs) : Contribute to EE/DR market transformation efforts by accelerating stakeholder adoption of measures through transfer of available ETP measures into IOU EE programs or through other implementation channels. The focus of this Goal is increased market demand.

Objective 2.1: Perform Technology Assessments

During the 2013-2014 funding cycle, assess twenty-eight (28) EE measures, including integrated demand-side management (IDSMS) measures as defined by the EE Policy Manual.

Action Strategy 2.1.1a: Scan a wide variety of sources for measures that could help IOUs meet customer needs and achieve energy savings, demand reduction, and other IDSMS targets. Following are representative measures for ETP scanning in 2013-2014.

Lighting

Task/ambient lighting designs
LED/SSL lighting applications (internal, external)
Dual relay occupancy sensor

Self-commissioning dual loop daylight harvesting
Simplified daylight and occupancy controls
HID electronic ballasts
LED fixtures and systems
Dimmers for CFL's and LED's
Super CFL
Small HID
Smart occupancy sensor systems
Solid state street lights
Plasma lighting

HVAC

Climate Appropriate Technologies
Automated Fault Detection & Diagnostics
Retrofit technologies
Behavioral studies
Quality Maintenance
Adiabatic cooling
Geothermal heat pumps
Natural gas driven heat pumps
Electric heat pumps

Other

Industrial process technologies
Advanced gas water heating technologies
Super Boiler
Consumer and commercial electronics
Plug loads and associated technologies
Energy Management Systems (all sectors including residential)
AMI/HAN integrated technologies
Data center technologies (air handling and hardware)

Action Strategy 2.1.1b: Review national and state priorities for HVAC technologies as part of scanning efforts. The Statewide HVAC program plans within the Residential and Commercial Programs outlines a process around HVAC program design, implementation, technology assessment, ETP, and codes & standards. The framework includes an engaged industry stakeholder collaboration group, the Western HVAC Performance Alliance (WHPA), IOU HVAC Management team that includes participation from HVAC program/ETP/Codes & Standards managers, and the Western Cooling Efficiency Center (WCEC).

Action Strategy 2.1.1c: Coordinate with statewide lighting initiatives (including the CLTC, state regulatory organizations, and other key stakeholders) to receive input to the scanning process.

Output for Action Strategy 2.1.1: ET scanning will provide broad technology and market knowledge as a precursor to the ETP screening process.

Action Strategy 2.1.2: Execute a screening process for assessment candidates designed to ensure that the ET team most effectively focuses its time and resources on measures. Utilize the Residential and Commercial HVAC sub-program and statewide lighting initiatives as resources for providing information utilized in the screening process.

Output for Action Strategy 2.1.2: The ET screening process will produce a list of scored, approved, and funded measures for assessment. Ideas that pass the screening criteria will proceed to the next step of the ET process

Action Strategy 2.1.3: Conduct ET assessments to evaluate performance uncertainties and/or other attributes potential effectiveness / impact in reducing energy consumption and peak demand of new and/or underutilized measures.

Output for Action Strategy 1.1.3: The ETP will produce a report describing results and conclusions from each ETP assessment. Ideas that pass the assessment criteria will proceed to the next step of the ET process

Action Strategy 2.1.4: Develop and maintain a project tracking database containing the variables and attributes to be tracked by all ETCC programs statewide, and data will be reported to the CPUC on a regular basis. The naming convention shown in Appendix 3 will be used by all parties for tracking assessments.

Output for Action Strategy 2.1.4: The ETP will update the CPUC database quarterly.

Action Strategy 2.1.5: (SCE Only)

Output for Action Strategy 2.1.5: (SCE Only)

Action Strategy 2.1.6: The Emerging Technology Coordinating Council (ETCC) will host input sessions (Open Forum) to promote exchange of knowledge, perspectives and ideas two times per year. Like the ET Summit, these sessions will be organized by the ETCC and will be separate from quarterly ETCC business meetings. Increased access to ideas from outside organizations and entities will help the ETP maximize innovation and energy savings.

Output for Action Strategy 2.1.6: Minutes capturing assessment suggestions will be recorded for each session and used as an input to the scanning process.

Objective 2.2: During the 2013-2014 funding cycle, transfer measures from the ETP into the EE programs, with the goal of producing energy savings and/or demand reduction.

Transfers may include measures from assessments initiated or completed in previous ETP cycles as well as those from the current 2013-2014 program cycle.

Appendix 4 includes a diagram depicting the activities and the path for transitioning new technologies into EE programs.

Action Strategy 2.2.1: Evaluate program activity to assess the market acceptance one year, two years, and potentially three years after the launch of a measure transferred from ET. Review these findings with EE Program staff regarding potential improvement to both ETP and EE program activities.

Output for Action Strategy 2.2.1: Track EE program activity for measures assessed in the ET program.

Action Strategy 2.2.2: Provide information to internal stakeholders from assessments that could help IOU's IDSM resource acquisition programs create new measures, or revise/integrate existing measures, that increase energy savings in a variety of market sectors. Specific activities will include ensuring final reports are distributed and made available, discussing results with EE program managers and IDSM clients, and assisting with communications and program documentation, as needed.

Output for Action Strategy 2.2.2: Internal stakeholders will receive ETP final reports, discussion of ETP results, and other communication and documentation when relevant.

Action Strategy 2.2.3: Communicate information on high potential ET assessment findings to external stakeholders to help transform the market. Consult with internal and external partners to determine appropriate outreach activities for select specific measures. Possible outreach activities include:

- Post reports and results on the ETCC website.
- Debrief assessments partners on findings through a meeting, memo, or podcast.
- Execute public relations efforts, such as development and dissemination of press releases and articles for trade publications.
- Present findings at industry and community meetings/conferences, with a focus on promoting IDSM efforts.
- Submit articles to industry publications.
- Provide technical information to, and support information dissemination by the energy centers operated by each of the IOUs.
- Meet with market actors, including technology owners, manufacturers, allies, channel partners, trade association members, utilities, investors, and technology developers.
- Utilize the bi-annual ET Summit Conference as a forum to communicate assessment results.

Output for Action Strategy 2.2.3: The ETP will post reports and results on the ETCC web site [<http://www.etcc-ca.com>] when the results/findings are appropriate for external dissemination. Note that many outreach activities in Action Strategy 1.2.3 are not mentioned here due to high tracking costs.

Action Strategy 2.2.4: Proactively serve as subject matter experts and advisors to EE and IDSM program managers. Support transfer and development of EE measures based on assessments and market and behavioral studies. Coordinate with EE programs and other IOU resources for successful EE measure roll-out.

Output for Action Strategy 2.2.4: Increased EE program manager knowledge and understanding. As portfolio designer and administrator, PG&E evaluates and manages the measures, incentives and channels delivered to our customers through the EE portfolio. PG&E will add emerging measures and sunset mature measures that no longer require subsidies as part of this measure life cycle process. This portfolio management activity is vital to maintaining a portfolio comprised of measures that meet customers' needs and deliver the required resource for California.

Action Strategy 2.2.5: Conduct research for EE measures in accordance with guidance decision to support the development of energy savings ex-ante values

Output for Action Strategy 2.2.5: Increased number of measures in the EE portfolio.

ETP Goal #3: Support technology introduction and whole-building deep-energy reduction strategies.

The action strategies used in these projects may include but are not limited to scaled field placements, demonstrations, and/or showcases. The specific action strategy for each project will be specified in each project's plan.

Objective 3.1: Conduct field deployments (2013-2014: Changed to a element in support of ETP Goal # 3)

Conduct scaled field placements during the program period to increase market understanding¹ and traction for new and underutilized measures.

Action Strategy 3.1.1: Scan a wide variety of sources for measures for scaled field placements that could help IOUs to increase market understanding and traction for new and underutilized measures.

Outputs for Action Strategy 3.1.1: ET scanning will provide broad technology and market knowledge as a precursor to the ETP screening process to identify opportunities for scaled field placements.

Action Strategy 3.1.2: Execute a screening process for scaled field placements candidates designed to ensure that the ET team focuses its time and resources on measures most effectively.

Outputs for Action Strategy 3.1.2: The ET screening process will produce a list of scored, approved, and funded measures for scaled field placements. Ideas that pass the screening criteria will proceed to the next step of the ET process (Action Strategy 1.3.3)

Action Strategy 3.1.3: Conduct scaled field placements to increase market acceptance and traction for new and underutilized measures².

Output for Action Strategy 3.1.3: At a minimum, the following data will be tracked for each scaled field placement: documents supporting the funding decision, number of measures installed, and EE program activity for programs where the installed measures would qualify.

Action Strategy 3.1.4: Evaluate program activity to assess the market acceptance at one year and two years, and potentially at three years after the launch of a scaled field placement. Review these findings with EE Program staff regarding potential

¹ It should be noted that unlike assessments, the primary information dissemination mechanism for scaled field placements is first hand experience utilizing the measure.

² Note: measures in scaled field placements will almost exclusively be measures already included in EE programs.

improvement to both ET and EE program activities.

Output for Action Strategy 3.1.4: The ETP will track EE program activity for EE measures utilized in scaled field placements.

Objective 3.2: Conduct technology demonstrations (2013-2014: Changed to a element that can be used to support more than one ETP Goal) Conduct IOU demonstrations and showcases to expose stakeholders to the performance of measures or systems. Highlight real-world applications and installations for market actors and end users^{3,4}. An example of these projects could include supporting the construction of a high-performance residential building to demonstrate how multiple measures integrate to deliver near-ZNE performance.

Action Strategy 3.2.1: Scan a wide variety of sources for measures for demonstration showcases that could expose technology to various stakeholders and demonstrate technology performance and applicability in real world applications.

Output for Action Strategy 3.2.1: ET scanning will provide broad technology and market knowledge as a precursor to the ETP screening process to identify opportunities for demonstration showcases.

Action Strategy 3.2.2: Execute a screening process for demonstration showcases candidates designed to ensure that the ET team most effectively focuses its time and resources on measures.

Output for Action Strategy 3.2.2: The ET screening process will produce a list of scored, approved, and funded measures for demonstration showcases. Ideas that pass the screening criteria will proceed to the next step of the ET process (Action Strategy 1.4.3)

Action Strategy 3.2.3: Conduct demonstration showcases to expose technology to various stakeholders and to demonstrate technology performance and applicability in real world applications.

Output for Action Strategy 3.2.3: At a minimum, the following data will be tracked for each demonstration showcase: documents supporting the funding decision, location of installed measures, and any available data regarding people who viewed/attended/participated.

³ It should be noted that unlike assessments, the primary information dissemination mechanism for demonstration showcases is first hand exposure to the measure.

⁴ ETP Demonstration Showcases are expected to complete in or before the fourth year after the year in which the Demonstration Showcase is initiated. Therefore, expenditures for demonstration showcases initiated and funded for the 2013-2014 program cycle may be incurred through 2018.

ETP Objective 3.3: Conduct Technology Resource Innovation Program (TRIP) Solicitations.

Action Strategy 3.3.1 PG&E will closely coordinate with the Third Party Program on the innovative portion of IDEEA365 that leverage innovative EE and/or IDSM technologies and approaches in order to meet its TRIP goal. The awarded party will be administered by the utility's EE third party portfolio group.

Output for Objective 3.3.1: TRIP will solicit and award new third party programs through IDEEA365.

Market and Behavioral Studies: (2013-2014: Changed to a element that can be used to support all ETP Goals) Perform targeted studies of customer behavior, decision making, and market behavior to gain understanding of customer/market perception and acceptance, and to identify potential barriers to measure adoption.

Perform primary IDSM related market and behavioral studies to enhance market intelligence of customer needs and “decision triggers” to improve acceptance of new or under-utilized energy efficiency technology.

All market and behavioral studies will be captured in a final report.

Review and analyze secondary research as found, for example, from IOU subscription market research services such as E Source and Energy Insights, and from such organizations as Energy Information Administration, National Technical Information Services, and CALMAC, as well as in reports such as the Residential Appliance Saturation Survey and Commercial End-Use Survey.

Secondary research findings will be captured in a final report.

Conduct the following types of studies:

- Perform market research studies to assess the potential impact of and barriers to implementation of proposed measures;
- Investigate specific technology gaps for a given market segment;
- Conduct an Energy Technologies/RD&D gap analysis for agricultural EE as included in the Strategic Plan; Identify and prioritize needed RD&D/ET projects;
- Perform customer research to assess the need for and optimal design of scaled field placements and demonstration showcases;
- Perform usability studies to assess how easily customers can adapt to and benefit from new measures; For instance, in-home monitoring and display technologies;

- Perform a scoping study, including findings from the Commission's potential and goals studies, of the overall long-term market potential for Emerging Technologies with estimates on targeted technologies and systems;
- Perform customer research to identify approaches to making new measures more attractive to customers;
- Perform customer research on the potential impact of social network software and other behavioral tools in expanding the impact of EE programs; and
- Perform market research to identify approaches for accelerating the pace of deployment of new EE and IDSM measures and programs.
- Develop roadmaps in accordance with 2013-2014 portfolio guidance decision.

Produce reports summarizing study findings.

Develop residential and commercial roadmaps that encompass existing building retrofit and new construction programs by the end of the fourth quarter of 2013, in preparation for their inclusion in their 2015 and later energy efficiency portfolios. Ensure collaboration with Energy Division staff and other EE programs for the development of the scope for these roadmaps.

Disseminate market and behavioral reports.

Post all market and behavioral reports on ETCC web site, where results/findings are appropriate for dissemination.

ETP Goal #1: Increased EE Technology Supply

Contribute to EE/DR market transformation efforts by assisting technology developers and manufacturers to create technology supply with respect to emerging technologies, including supply for the Big Bold Initiatives, thereby increasing the number of EE measures that are available for adoption. The focus of this Goal is increased technology supply.

Objective 1.1: Support technology development

During the **2013-2014** program cycle, the ETP will screen, select, and implement targeted technology development support projects to benefit EE product development.

Action Strategy 1.1.1: Identify targeted opportunities to develop forward looking product specifications which could be used by a multitude of product developers. This effort could be most effective if the opportunity exists to tie future rebates or other incentives to the specifications. This may include development of an open source or proprietary product specification for entrepreneurs to build to – possibly with incentives. This may also contribute to competitions to develop new product concepts/meet specifications.

Output for Action Strategy 1.1.1: Produce open source or proprietary specifications.

Action Strategy 1.1.2: Look for targeted opportunities to establish product baseline performance levels. As an independent entity, the utilities may be in a position to establish baseline performance levels. This baseline information would serve as an input to product development efforts. Often, it is expensive and time consuming for developers to establish baseline performance in a product segment.

Output for Action Strategy 1.1.2: Distribute baseline performance level reports to targeted product developers and partner entities.

Action Strategy 1.1.3: Look for targeted opportunities to develop standard test protocols for energy efficient products, in support of statewide Codes & Standards Program.

Output for Action Strategy 1.1.3: Develop and disseminate standard EE product test protocols in conjunction with statewide Codes & Standards Program.

Action strategy 1.1.4: Look for targeted opportunities to provide customer contacts for testing and focus groups. Utilities may be in a unique position to help connect product developers with customers willing to participate in field tests of measures and provide feedback.

Output for Action Strategy 1.1.4: A list of customers who have agreed to have their contact information shared with a technology developer.

Action strategy 1.1.5: Look for targeted opportunities to conduct market or behavioral studies and otherwise provide and/or collect market intelligence. Utilities may have access to or the ability to collect market intelligence that would help justify product development investment and guide product development targets.

Output for Action Strategy 1.1.5: Any market or behavioral studies will be captured in a final report.

Action strategy 1.1.6: Look for targeted opportunities to make expertise/knowledgeable personnel available as resources to product developers. Utilities may be in a position to advise on certain subject matter.

Output for Action Strategy 1.1.6: Produce an activity report for time charges incurred by ETP, while providing support to product developers.

Action Strategy 1.1.7: Look for targeted opportunities to make testing facilities and/or other infrastructure available to multiple product developers. Utilities may be in a position to facilitate the sharing of capital intensive testing facilities or other

infrastructure across parties developing energy-efficient products. Often, these resources serve as a barrier to product development or as a barrier to product quality and performance success.

Output for Action Strategy 1.1.7: Produce an activity report for testing and other infrastructure support provided to product developers

Objective 1.2. Conduct technology developer outreach through TRIO

Incubate businesses developing or selling EE or DR measures. TRIO focuses on providing training and networking for entrepreneurs and companies providing energy saving technologies. This will include providing training workshops and mentoring on participating in IOU programs and the IDSM business environment. More detailed information regarding the TRIO efforts are included in Section 8 of this PIP.

(2013-2014: Incorporated into the project selection criteria for each Sub-program)

Support achievement of the Strategic Plan Big, Bold initiatives for ZNE New Residential Construction, ZNE New Commercial Construction, ZNE for Existing Buildings, HVAC Industry and Market Transformation, and related solutions, such as advanced lighting measures, through programs and initiatives aimed at each. As the Strategic Plan is prominent in the activities of the ETP, a significant portion of the efforts undertaken towards goals 1 and 2 will contribute towards goal 3.

(2013-2014: Incorporated into the project selection criteria for each Sub-program)

Help advance innovative measures and/or strategies to support ZNE New Residential Construction, ZNE New Commercial Construction, ZNE for Existing Buildings, HVAC Industry and Market Transformation, and related solutions during 2013-2014.

(2013-2014: Incorporated into the project selection criteria for each Sub-program)

Scan, screen and execute emerging technology projects in the areas of assessments, scaled field placements, demonstration showcases, market and behavioral studies, and/or technology development support to support ZNE New Residential Construction, ZNE New Commercial Construction, ZNE for Existing Buildings, HVAC Industry and Market Transformation, and related solutions during 2013-2014. (Projects in this action strategy will be considered to fulfill objectives in multiple Goals where relevant.)

(2013-2014: Incorporated into the project selection criteria for each Sub-program)

Outputs for these projects would be as stated for the corresponding projects under goals 1 and 2.

Numerical Deliverables

The 2013-2014 ETP brings an expanded set of tools to the complex task of supporting Strategic Plan's goals, while assisting EE and IDSM programs in achieving maximum impact. As certain objectives involve activities that are new to the ETP, there is some degree of inherent uncertainty with regards to numerical deliverable levels. (An example of a numerical deliverable is "Conduct Technology Introduction Projects")

To account for this inherent uncertainty, while allowing the use of numerical deliverables, the ETP may need to substitute additional assessments in place of other program deliverables, if necessary, in order to meet numerical deliverable levels described in the Table 4. For instance, if projections for a demonstration showcase for an “Office of the Future” are significantly more costly than anticipated, the ETP may substitute one or more technology assessments to assure a successful, timely, and cost-effective outcome from all objectives that contribute to the ETP Goals.

Table 4. 2013-2014 Numerical Goals

2013-2014 Subprogram	Objective	Cycle Numeric Goal
Sub-program #1 Technology Development Support Subprogram	Screen, select, and implement targeted technology development support projects to benefit EE measure development.	2
	Conduct technology developer outreach through workshops	3
Sub-program #2 Technology Assessments Subprogram	Assess EE measures, including integrated demand-side management (IDSM) measures	22
	Transfer measures from the ETP into the EE programs, with the goal of producing energy savings and/or demand reduction.	8
Sub-program #3 Technology Introduction Support Subprogram	Conduct technology introduction activities	8
	Conduct Technology Resource Innovation Program (TRIP) Solicitations	1

Program Performance Metrics (PPMs)

The IOUs have evaluated 2010-2012 PPMs in Resolution E-4385 for applicability to the 2013-2014 program cycle and propose to work collaboratively with Energy Division to develop revised program targets and PPMs as appropriate for the 2013-2014 program cycle. The IOUs’ will propose revisions in an advice letter, per additional guidance from Energy Division.

Table 5.1 Short-Term PPMs

On December 2, 2010, the Commission issued Resolution E-4385, approving short-term Program Performance Metrics (PPMs) for Pacific Gas and Electric Company, Southern California Edison Company, Southern California Gas Company and San Diego Gas and Electric Company for 2010-2012 statewide energy efficiency programs and subprograms. The

Commission gave each PPM a metric type which indicated the reporting frequency: Metric type 2a indicates that the IOUs should report on the metric on an annual basis (unless indicated otherwise) Metric type 2b indicates the IOUs should report on the metric at the end of the program cycle.

EMERGING TECHNOLOGIES (ET)		
	1. The number of new "proven" ET measures adopted* into the EE Portfolio. * "Adoption" means measure is available to end-use customers through IOU programs. Adoption of a measure may be attributed to one or more ET sub-programs	2b
	2. Potential energy impacts* (energy savings and demand reduction) of the adopted ET measures into the EE portfolio. * Potential energy impacts to be reported based on ET project findings and estimated market potential (reported through quarterly ET database updates)	2b
Technology Assessment (TA)	1. Number of ETP measures which have undergone TA that are adopted* into the EE portfolio, including but not limited to each of the following: (a) Advance HVAC technologies (b) High efficiency plug loads and appliances (c) Advanced lighting technologies * "Adoption" means measure is available to end-use customers through IOU programs.	2b
Scaled Field Placements (SFP)	1. Number of ETP measures that have undergone SFP and are adopted* into the EE portfolio. * "Adoption" means measure is available to end-use customers through IOU programs.	2b
Demonstration Showcases (DS)	1. Self-reported increase in knowledge by randomly selected sample of targeted stakeholders who either 1) visited the DS or 2) were informed about the DS in a workshop about benefits of the DS.	2b
Market and Behavioral (M&B) Studies	1. Self-reported increased in knowledge among internal ET stakeholders about the technologies targeted by the M&B studies.	2b
Technology Development Support (TDS)	1. Number of new performance specifications and/or Use Cases* produced as a result of TDS sub-program. * "Use Cases" describe the need for a technology or application.	2b
	2. Number of new performance specifications and/or Use Cases presented to manufacturers/private industry for possible action.* * "Possible action" means that the manufacturer/private industry considered TDS results in their product development efforts.	2b
Technology	1. Percent of attendees who voluntarily respond and self-report increased	2b

Resource Incubation and Outreach (TRIO)	understanding on how to do business with utilities.	
Technology and Testing Center (TTC)	1. Number of ETP measures evaluated at the TTCs in support of ET Assessments Sub-Program that are adopted* into the EE portfolio (and/or available in the market). * “Adoption” means measure is available to end-use customers through IOU programs.	2b

Table 5.2 Long Term PPMs

PG&E includes long term PPMs⁵ per Energy Division guidance received in December 2012. As stated in the Joint Utilities’ comments to the Commission in R. 09-11-014 dated November 21, 2011, and discussed between IOUs and ED on January 9, 2013, IOUs plan to finalize long term PPMs in further discussions with involved stakeholders and propose updates to Energy Division at a later date.

MTI Index#	RE-CATEGORIZED Metric (LTPPM - or SPI) [E-4385 Appendix B original text except for noted edits]	Unresolved Issues
Emerging Technologies	<u>MT Indicator 2:</u> Number of ETP measures (or technical specifications) adopted* into building codes and/or appliance standards by CEC.	Clarification of "adoption" would be necessary.

Market Transformation Indicators (MTIs)

Per Resolution E-4385 a subset of market transformation indicators (MTIs) for statewide energy efficiency programs and subprograms were presented at a public workshop on November 7, 2011, to allow for public comments and discussion before being finalized. Per guidance from Energy Division received in December 2012, the approved Market Transformation Indicators for 2013-2014 were filed in a Joint IOU matrix as an appendix in PG&E’s January 14, 2013 compliance filing.

- 6) Coordination and Integration
IOU coordination efforts are described below

5.1 ETP Statewide Coordination

⁵ From the Energy Division’s file “Revised MTIs_10 27 11-formal-release-ED-May-2012.xlsx”

A key strength of the ETP is the value created through ongoing collaboration among the statewide IOUs. Continuing and enhancing this statewide collaboration will contribute to the successful accomplishment of the ETP goals and objectives.

5.1.1 – Leveraging role of the Emerging Technologies Coordinating Council

(ETCC): The ETCC plays a central role in statewide ETP coordination. The ETCC membership consists of the IOUs, the CEC, and CPUC staff. During 2013-2014, the ETCC will meet at least four times per year to coordinate activities, exchange information, and define new and enhanced collaboration strategies.

Discussion at ETCC business meetings may touch on privileged customer information, business strategic and operational details, and privileged manufacturer product details that are too sensitive to discuss in an open forum. For this reason, ETCC business meetings will not be open to the general public.

The ETCC also convenes sub-groups to address statewide ETP collaboration opportunities that require additional time beyond what is available during regular ETCC meetings. For instance, a standing lighting sub-group meets quarterly, and the ETCC will host an upcoming hot, dry air conditioner meeting with the Western Cooling Efficiency Center at UC Davis.

In accordance with 2013-2014 guidance decision, ETCC membership will be expanded to research organization including research universities, national labs, energy centers, and other research organization. A new “collaborative” membership category will be developed. Potential new members will be invited to join.

5.1.2 – Collaboration with Municipal Utilities: As over 300 California municipal utilities launch or expand EE efforts, they are becoming increasingly aware of the need for, and potential benefits of, new and under-utilized measures to meet EE program goals. The ETCC is responding by promoting coordination and information sharing between ETCC members and municipal utilities.

This collaboration will include sharing information and results connected with upcoming IOU and CEC market studies, measure assessments, and scaled field placement activities. The IOUs will also provide recommendations to municipal utilities that have their own ET programs or are considering launching ET efforts, and may encourage municipal utility ET program staff to attend quarterly ETCC meetings.

Due to the large number of municipalities, their geographical range and varying stages in EE program development, the ETCC will work with conveners such as the largest and most advanced municipalities (SMUD, LADWP, City of Palo Alto, etc.) and municipality-coordinating entities like the Northern California Power Agency and Southern California Public Power Authority.

5.1.3 – Forums and Training: The ETCC will support the Incubation objective under ETP Goal 2 by holding three training sessions every year for researchers to educate them about utility and investor perspectives, challenges, and needs.

5.1.4 – Knowledge Sharing: On a strategic level, the statewide ETP is committed to developing and implementing practices and tools to maximize collaboration and integration among the IOU ETPs. This will include comparing ETP local plans and identifying opportunities to reinforce and maximize statewide coordination and integration, keeping in mind the distinct resources, expertise, and customer base for each IOU.

5.1.5 – Coordination with non-IOU entities: Finally, the statewide ETP will expand statewide emerging technology projects and projects that leverage funding from non-IOU entities. The IOU ETPs will continue to identify and participate in collaborative projects that are co-funded by federal agencies or other large funders and that meet ETP criteria.

5.2 - ETP Coordination with EE Resource & Non-Resource Programs

The ETP maintains crucial touch points with EE resource programs and many non-resource programs, which serve as key clients for the measures that ETP assesses and makes available for implementation. Coordination with these EE programs occurs throughout the ETP screening, selection, assessment, and transfer process.

5.2.1 – Idea Generation Coordination: Ideas for new measures often come from EE program staff or through the professional networks of EE staff. At the screening stage, the ETP relies on input from EE program managers to score measures for assessment. EE program staff also plays a key role in identification of host sites for field assessment projection, scaled field placements, and demonstration showcases. The transfer of new measures from the ETP into EE programs takes place through a close collaboration between the programs.

5.2.2 – Feedback Loop with IOUs and M&V Community: In 2013-2014, the ETP will expand feedback loops with program staff and M&V consultants to increase the understanding by ETP and EE program staff of impacts from each new measure that has been transferred EE programs, including those that do not achieve projected levels of market penetration, energy savings, or demand reduction.

This will take the form of an initial meeting 12 months after a measure is transferred from ETP to an EE program, with a second meeting 24 months after transfer. An additional follow-up meeting will be scheduled three years after transfer, as needed.

5.3 - ETP Coordination with Cross-cutting Programs (Codes & Standards, Statewide M&O, WE&T etc.)

The ETP has a history of productive connections with cross-cutting programs including Codes & Standards and Energy Centers, and has successfully demonstrated that collaboration can maximize the impact achieved by all parties.

5.3.1 – Assessment Synchronization: In 2013-2014, ETP staff will hold regular conversations with Codes & Standards staff to exchange methods for estimating the impacts of new measures through analysis and testing, and support the advancement of technologies that may be included in future codes and standards and reach codes. Where practical, the ETP will collaborate with Codes & Standards on measure assessments, and will seek to identify and transfer measures with potential to go directly from ETP to Codes & Standards.

5.3.2 – Collaboration with Energy Centers: ETP will continue to grow its multi-faceted collaboration with Energy Centers, where new measures for potential assessment may be suggested by visitors or staff, where some assessments may be conducted in a controlled field environment, and where successful assessments are often showcased in exhibits that educate hundreds to thousands of interested customers.

5.3.3 – Cross-cutting Programs Coordination: The statewide Workforce Education & Training (WE&T) and statewide Marketing, Education & Outreach (ME&O) programs will offer new coordination opportunities. ETP assessments and market and behavioral research may pinpoint marketing and education needs that these two cross-cutting program can deliver. Conversely, these programs can identify opportunities for new or under-utilized measures, and may find potential limitations in EE measures that lend themselves to action by ETP. For instance, a new type of fan that is featured in a WET program could elicit comments by contractors about installation or maintenance issues that the ETP can address or can relay to the product developer or manufacturer. ETP will help identify workforce training needs, as appropriate, for advanced technologies in their early stages of development.

5.3.4 – Feedback Loop with Cross-cutting Programs: As with statewide and local IOU EE Resource and Non-Resource programs, the ETP will expand feedback loops with cross-cutting programs to increase the understanding by ETP and EE program staff of impacts from selected new measure that are relevant to the audiences, staff, and information gathering capabilities of the cross-cutting programs.

5.4 - ETP Coordination with IDSM

ETP has long-standing and strong connections with energy efficiency and demand response (DR) programs, and is poised for broader IDSM integration. In ~~2009-2011~~ 2013-2014, ETP will undertake a coordinated effort to support innovation in EE, DR, renewable and combined heat and power programs. Among the many examples of this, ZNE new commercial construction, ZNE new residential construction, and ZNE for existing buildings stand out as opportunities to integrate on-site or neighborhood generation, co-generation, EE, and DR opportunities. Under the ETP demonstration

showcases Objective 1.4 and Goal 3 described in Section 5 above, residential and commercial sites will be developed featuring integrated energy systems for proof-of-concept, technology and usability assessment, and market exposure.

ETP brings a strong aptitude for IDSM integration, since assessment results for lighting and HVAC control strategies are equally applicable to EE and DR programs. It is natural to expand an ETP assessment to investigate both options with relatively modest incremental efforts, compared to an assessment for just EE or DR. Several control strategies listed under Action Strategy 1.1.1 in Section 5, above, can potentially be part of such an IDSM assessment.

Similarly, ETP has experience with EE – DR – on-site generation / cogeneration applications. For instance, ETP led efforts in 2007-2008 to obtain a CPUC waiver of EE Policy Manual requirements that might have disallowed incentive payments for the SolarBee water treatment technology, which uses integral onsite solar electric generation to operate.

Going forward, the EE Policy Manual should be revised to reflect a bias towards IDSM and to disambiguate issues like the one that raised questions about the SolarBee technology.

Finally, ETP IDSM coordination will benefit from the existing ETP network of partners described in Section 6.5., below, and elsewhere in Section 6. The statewide IDSM PIP provides additional information on these issues.

The IOUs will coordinate program efforts with the local utility integration teams and the Statewide Integration Task Force to identify successful integration approaches and offerings, potential pilot programs and metrics.

5.5 - ETP Coordination with External Organizations and Entities

Collaboration with external partners and allies plays an essential role in virtually all aspects of ETP operations, from screening and selecting measures for assessment, to performing assessments and scaled field placements, developing demonstration showcases, communicating ETP results, and transferring measures to the market through EE programs and other implementation channels.

5.5.1 – Alliances External Organization: To ensure successful coordination with the full range of external organizations and entities involved in developing new measures, ETP staff will receive explicit assignments and budgets for outreach and conference attendance to maintain a high level of awareness of research and development (R&D) activities across government, utilities, including those located in the Pacific Northwest, agricultural extension and university programs, and private industry, including selected proprietary efforts.

This interaction provides both ideas for new ETP measures and access by the ETP to propose new concepts or modifications to existing research that will result in measures for future ETP assessment and EE deployment. In this way, ETP uses its alliances with external R&D entities to leverage private industry and federally funded technology research and investment for the benefit of California ratepayers.

For instance, CEC ER&DD and The Watt Stopper, Inc. have provided valuable new measures to the ETP and have also been receptive partners, incorporating ideas from the ETP for their new measure R&D.

6.6 – Codes and Standards Integration

When ETP has completed review of a measure, external organizations play a crucial role in disseminating the results before, during, and after the transfer of the measure into EE programs or other implementation channels. For instance, ETP collaborates with industry trade organizations, large tech companies, entrepreneurs, UC Berkeley Center for the Build Environment, consultants, and others on educational outreach for building envelope EE measures.

Another example is ETP work on HVAC measures that may go directly to building standards. In these cases, ETP supports the Statewide Codes & Standards program through at all stages of measure development and evaluation through alliances with the California Building Standards Commission, American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) technical committee members to accelerate building design standards.

On lighting measures, ETP works with the DOE, Environmental Protection Agency (EPA), Illuminating Engineering Society of North America (IESNA), CEC, including the CEC ER&DD program, and leading lighting manufacturers and consultants.

7) Marketing and Outreach/Education & Training

To maximize the benefits of its work, the ETP delivers information in many forms to many different groups. (The primary means for the ETP to disseminate information is through EE programs, including the Energy Centers.)

Among these benefits, ETP communications on measures that are being transferred or have been transferred to EE programs will assist companies, departments, and governmental entities in understanding EE measures' actual performance, breaking down barriers to proactive implementation.

7.1 – Sharing of Information through ETCC: The ETP partners will continue to utilize the ETCC as a central medium for the delivery of ET information. The ETCC website (www.etcc-ca.com) provides an overview of the ET program, a database of ETP project

reports and fact sheets, information on upcoming meetings, and information on hosting an emerging technology project or proposing a measure for consideration.

7.2 – Distribution of Information through Other Sources: The ETCC website is just one of ways the ET program transfers information. Findings, results, and analyses are delivered to a variety of audiences through one or more of the following mechanisms:

- Providing technical information to Energy Centers run by each of the IOUs, supporting Energy Center information dissemination;
- Providing technical information to utility energy efficiency programs, supporting energy efficiency program information dissemination;
- Speaking opportunities with community organizations;
- Presenting open houses at ETP demonstration showcase sites for key stakeholders and the public at large;
- Meetings and coordination with technology owners, manufacturers, allies, channel partners, trade association members, utilities, investors, and technology developers;
- Presentations at state, local, and national meetings and conferences;
- Analysis and design tools intended for utility energy efficiency program and product developers, technology owners and manufacturers, and others;
- Public relations efforts, such as development and dissemination of press releases, media kits, and articles for trade publications; and
- Organizing and producing the bi-annual Emerging Technology Summit Conference, a collaborative effort among the IOUs with the CEC ER&DD Program.

8) Subprogram Components

a) Technology Resource Innovation Outreach (TRIO) Program Description

(2013-2014: Changed to a element that can be used to support Goal #1) Technology Resource Innovation Outreach (TRIO)

TRIO is a statewide element that aims to draw a greater number of providers of desired, energy saving measures into the utility EE and DR programs by:

- Providing training workshops;
- Providing energy efficiency and demand response “mentoring”; and
- Coordinating with existing clean tech programs (such as the California Cleantech Open and various clean tech business clusters).
- TRIO contribute to the market transformation with efforts that help accelerate the commercialization of energy-efficient measures by reaching out to universities, ER&DD, investors, and other research organizations to encourage innovative EE and DR concepts. TRIO also reaches out to investor deal flows to find potential

energy efficient measures. Determine what technologies the market is demanding.

- Participate and hold roundtable meetings with investors.
- Provide transparency of each IOU's demand side management rebate and incentive processes by providing statewide workshop rotating between IOUs, on "how to" do business with utilities. These workshops are geared toward third party implementers and the requirements necessary to be awarded a purchase order by a utility. These workshops will educate the investor and technology communities on the requirements necessary for doing business with utilities.
- These workshops will include the requirements of measure selection, DSM integration, technical documentation (for example, E-3 calculator, DEER etc.), energy efficient and demand response definitions, and the California Solar Initiative. Investors, entrepreneurs, and manufacturers will become educated about what a utility qualifies as an EE and demand response measure. This qualification will make the measure more viable for investment purposes.

TRIO Coordination & Integration

Statewide IOU coordination will include planning meetings to discuss the workshops and roundtables. Each utility will designate a TRIO contact person to coordinate the workshops. Each workshop is held at a different utility to support statewide participation. Each utility will manage their specific budgets. The criteria used to evaluate measures will be developed through a statewide ETP effort:

- TRIO statewide coordination - There will be planning meetings attended by all California IOUs to discuss workshops and roundtables.
- TRIO coordination with statewide and local EE programs - Meetings will be conducted and include program managers from statewide and local programs to assist in reviewing innovative measures.
- TRIO coordination with cross-cutting - Workshops and roundtables will state the need for cross-cutting programs. Any cross-cutting measure that comes to the TRIO program will be evaluated by cross-cutting program managers.
- TRIO coordination with IDSM - There will be DSM coordination during the workshops, educating the candidates about demand response, California Solar Initiative, and energy efficiency. Training materials will be created that include an explanation of how to incorporate IDSM. The roundtables discussions will also include these materials.
- TRIO Coordination with External Organizations and Entities - TRIO will invite ER&DD, CalCEF, Cleantech Open, and various universities to education workshops on how to do business with utilities. Workshops will be sponsored by utilities 3 times per year.

TRIO Marketing & Outreach/Education & Training

- • TRIO will provide three workshops per year for all stakeholders and roundtables with investors and government programs to provide education. TRIO will outreach by attending and judging innovative competitions at universities and Cleantech Open.
- • The TRIO program workshops and roundtable schedules will be posted on the ETCC website. Presentation material from the events will also be posted on the website after the event is held.

9) Quality Assurance and Evaluation Activities

a) Timeframe of process evaluations and quality assurance activities

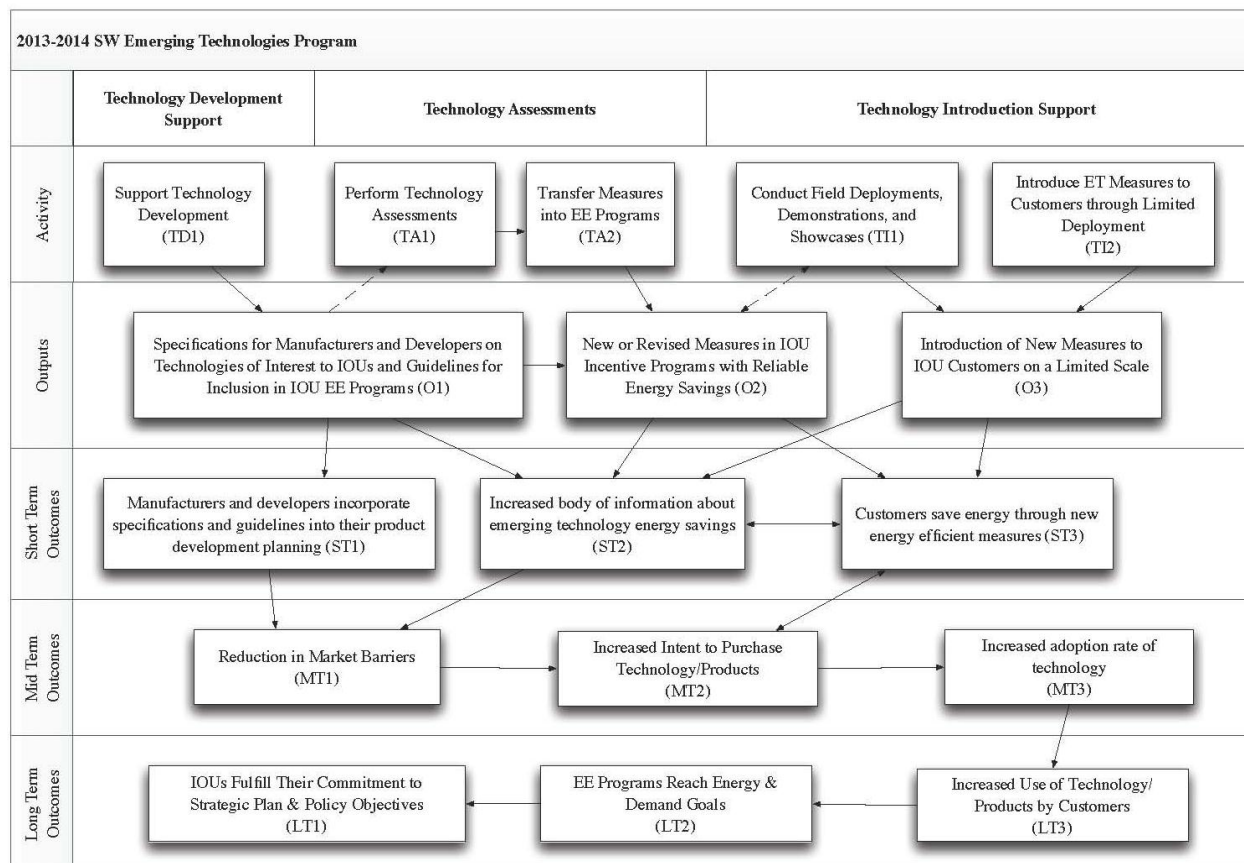
The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2013-2014 after the program implementation plans are filed. This will include process evaluations and other program-specific studies within the context of broader utility and Energy Division studies. More detailed plans for process evaluation and other program-specific evaluation efforts cannot be developed until after the final program design is approved by the CPUC and in many cases after program implementation has begun, since plans need to be based on identified program design and implementation issues.

The four IOUs will coordinate a statewide process evaluation to ensure that new program elements are being implemented as designed. This evaluation may be supplemented by specifically targeted activities that IOU program managers identify for purposes of continuous program improvement. These evaluations will be planned and launched on an as-needed basis.

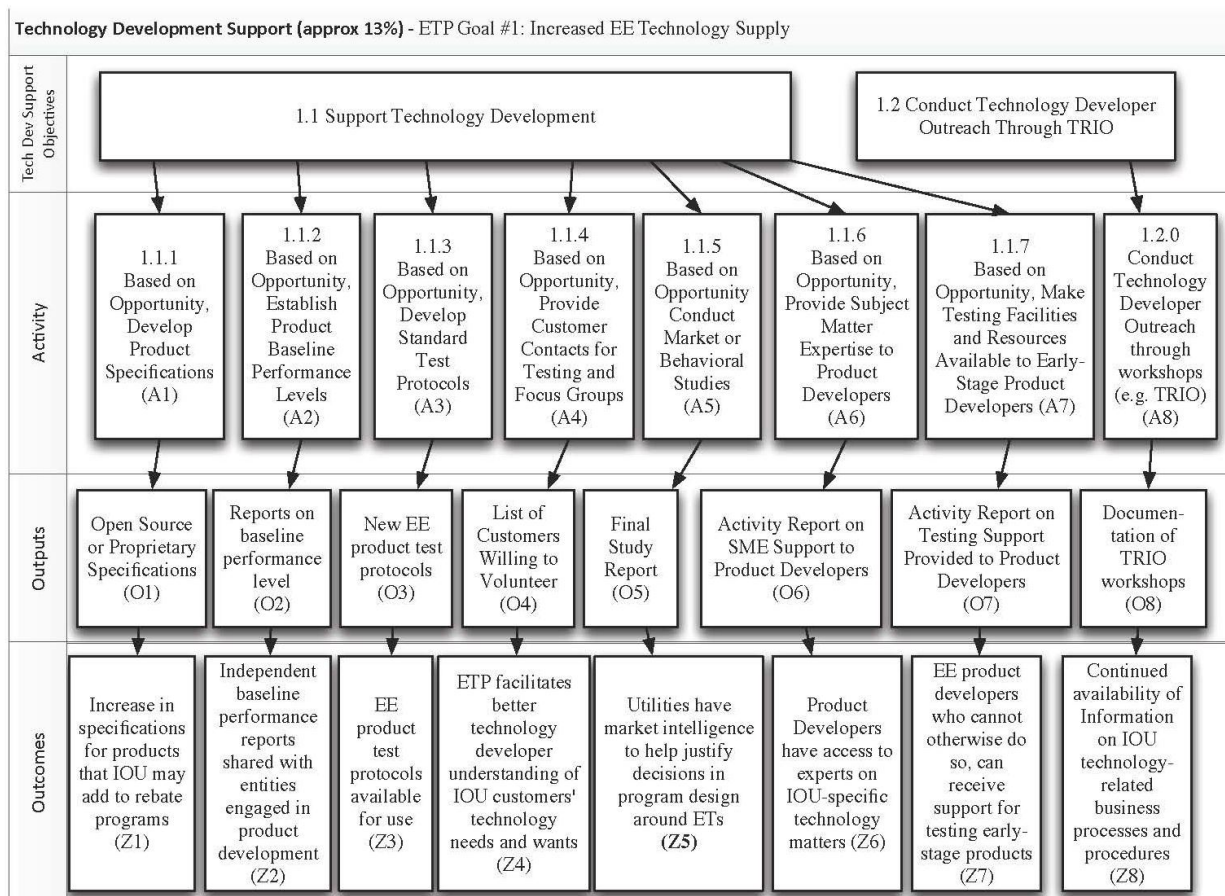
10) Program Logic Model and Performance Indicators

Below are the updated logic models for the Emerging Technologies Program.

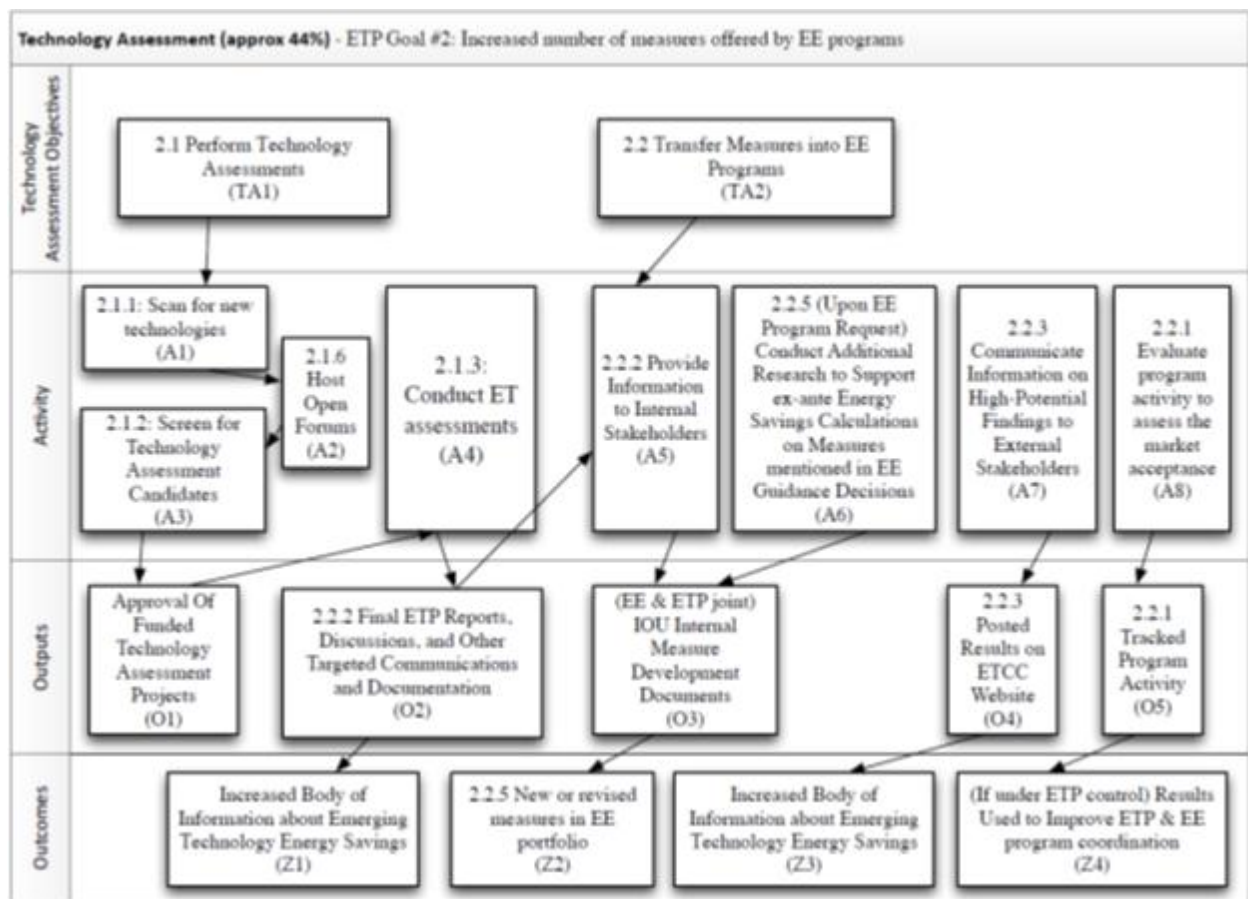
a) SW Emerging Technologies Program



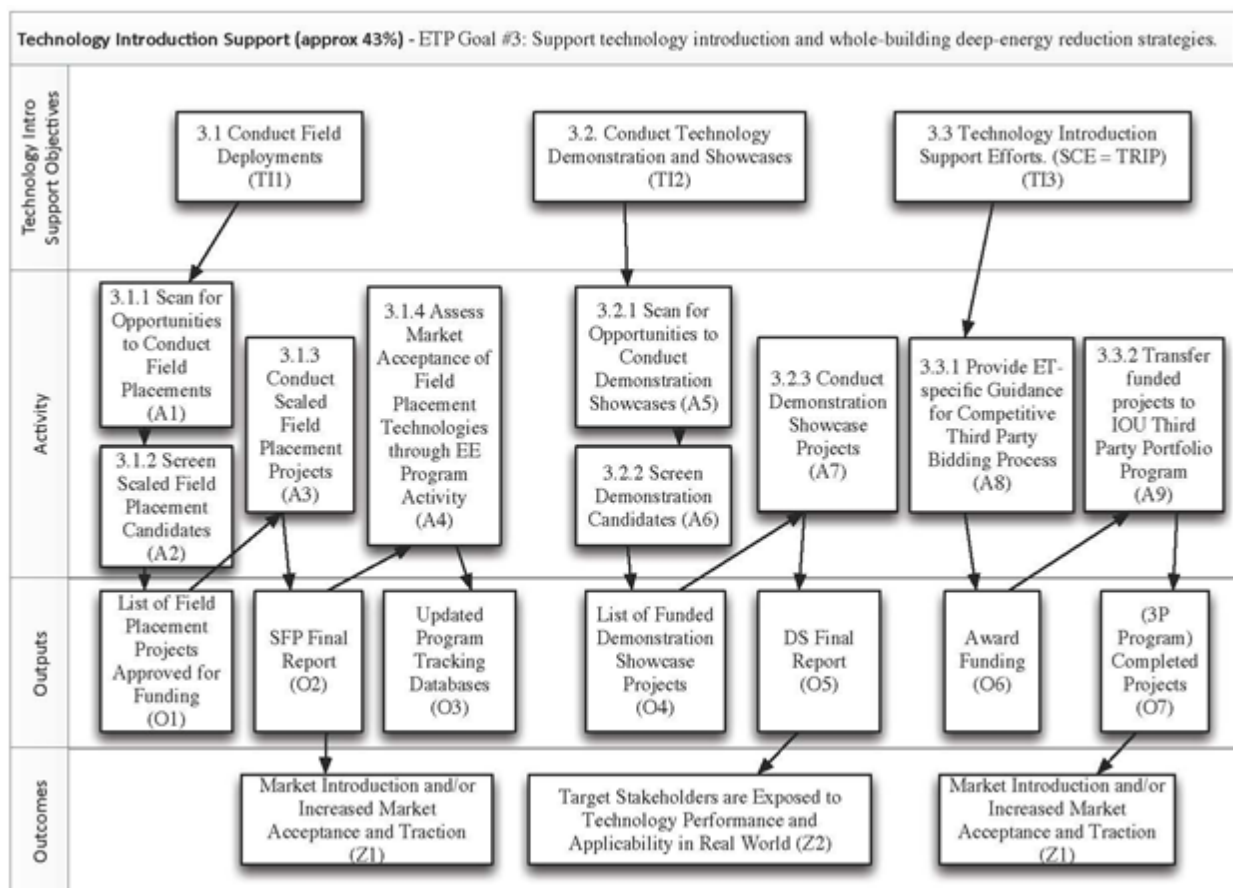
b) Technology Development and Support



c) Technology Assessments



d) Technology Introduction Support



Appendix 1

Appendix 1: ET Program 2013-2014 Planning Budget

Tables A and B below represent ETP's Direct Implementation Budget Breakdown Per 2013-2014 portfolio guidance decision. The budget allocation will encompass both short-term and long-term focus activities. In general, activities under Technology Development Support are intended to support long-term focused efforts. Long-term efforts refer to efforts that are intended to yield result in three or more years. For the Technology Assessment and Technology Introduction Support, the allocation of budget is approximately 50% short-term and 50% long-term. For Technology Assessments of new advanced and/or unproven technologies versus emerging and/or under-utilized technologies, the program intends to allocate its budget equally to both categories of technologies.

The information provided is for planning purposes only. Performance against budget allocations will not be tracked; however, reporting CPUC's ET database will be possible provided that capability is built by CPUC

Table A – Project ETP Budget Breakdown by Segment

	Residential	Commercial	Industrial	Agricultural	total
Technology Development Support	\$ 280,372	\$ 464,366	\$ 87,616	\$ 43,808	\$ 876,162
Technology Assessment	\$ 1,813,776	\$ 3,004,066	\$ 566,805	\$ 283,402	\$ 5,668,049
Technology Introduction Support	\$ 1,719,803	\$ 2,848,423	\$ 537,438	\$ 268,719	\$ 5,374,383
Total	\$ 3,813,950	\$ 6,316,855	\$ 1,191,859	\$ 595,930	\$ 11,918,594

Table B – Project ETP Budget Breakdown by End-Use

	HVAC	Plug Load/Controls	Lighting	Integ. Bldg Design & Ops	Other	total
Technology Development Support	\$219,040	\$43,808	\$306,657	\$262,849	\$43,808	\$876,162
Technology Assessment	\$1,417,012	\$283,402	\$1,983,817	\$1,700,415	\$283,402	\$5,668,049
Technology Introduction Support	\$1,343,596	\$268,719	\$1,881,034	\$1,612,315	\$268,719	\$5,374,383
Total	\$2,979,649	\$595,930	\$4,171,508	\$3,575,578	\$595,930	\$11,918,594

Appendix 2: Technology Push and Market Pull



Activities Increasing Technology Supply

- **Basic Research (Not ET)**
 - Perform technology research
 - Fund universities and labs
- **Support Technology Development (ET)**
 - Provide /collect market intelligence
 - Access to testing facilities
 - Contacts for customer testing/feedback
 - Establish standard test procedures
 - Establish baseline performance levels
 - Access to utility personnel for input
- **Outreach (ET)**
 - General outreach efforts
 - Lend credibility to select companies/ technologies
- **FORESEEABLE market demand (ET collaborates w/ EE)**
 - Future codes/stds announcements
 - Communicate future rebate programs (w/specs)
 - Other future adoption incentives

Activities Supporting Increasing Market Demand

- **Assessments – reduce risk (ET)**
 - Work paper data
 - Software updates
- **Scaled Field Placements (ET)**
- **Demonstration Showcases (ET)**
- **Market and Behavioral Studies (ET)**
- **Rebate Programs (EE)**
- **Education / Training (EE)**
- **TOU Rates / Cost Incentives (Regulatory)**
- **Codes & Standards (C&S)**
- **Social “Green” Marketing (IOU or other)**

Appendix 3

Appendix 3: ETP Database Project Naming Convention

The ETP database project naming convention will be as follows:

ETYYUUUNNNN

YY is the project initiation or funding year (e.g., 13 for 2013)

UUU is a three- letter utility descriptor (e.g., SCE, PGE, SCG, SDG, SEM)

NNNN is a four-digit numerical identification code for the project assigned by the IOU.

- The first N is for Program Element (1-Technology Assessments, 7-Technology Development Support, 8-Technology Introduction Support)
- The second and third Ns are 01-99 project number sequence
- The fourth N is for project phase
 - o NOTE - 0 is considered the first phase

Example: ET13SCE1050 - This is a first phase 2013 Technology Assessments project with a project sequence number five.

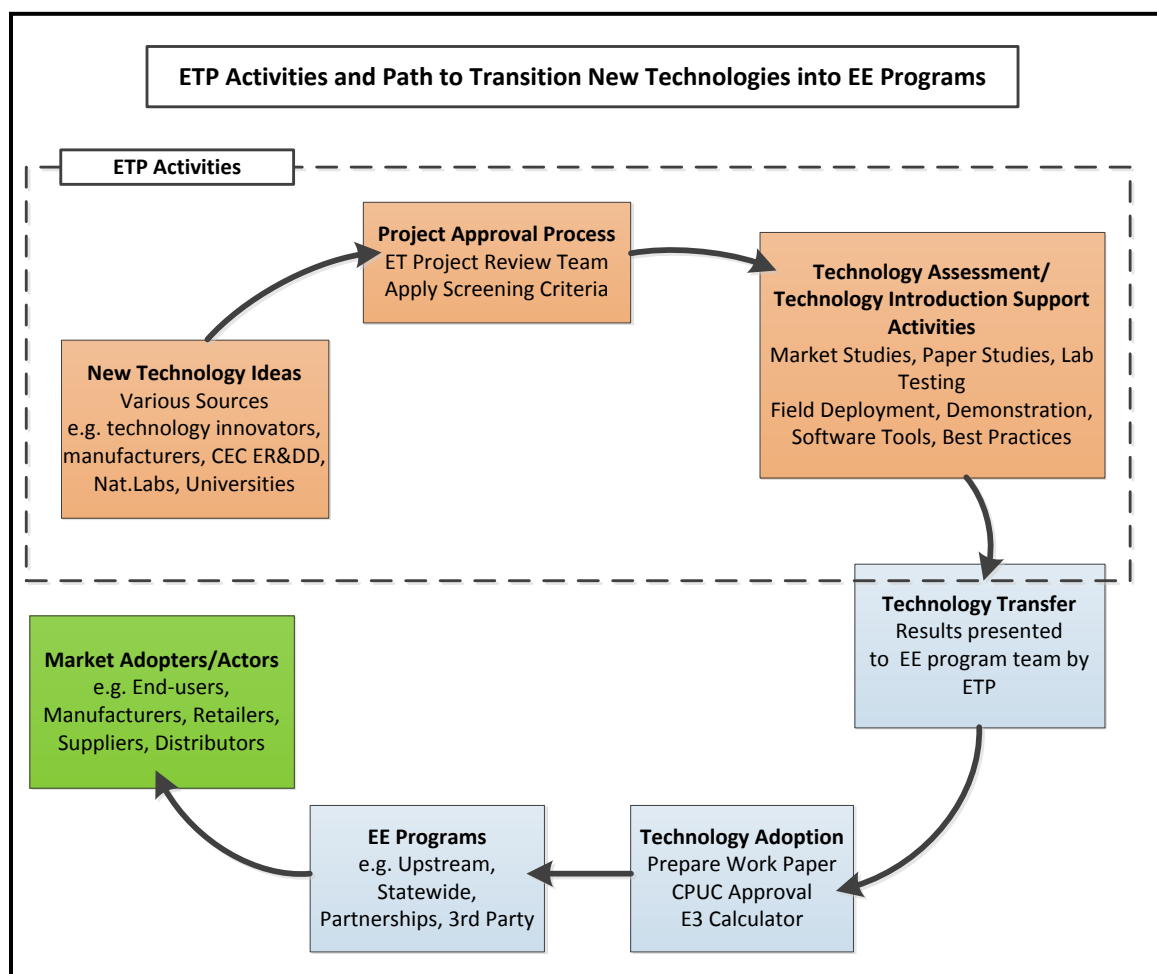
Note that project names will be issued during or after the initial project screening.

The data from these project databases will be extracted and sent to the CPUC under the same naming convention.

Appendix 4

Appendix 4: ETP Activities and Path to Transition New Technologies into EE Programs

The diagram below depicts the activities to transition new technologies into utility EE programs. These activities would help transition technologies from various sources, including national labs, universities, manufacturers and technology innovators. The initial review of a technology idea's viability as a rebated measure will be conducted by ETP staff. Following this initial review, ETP staff may determine that additional information is needed and undertake further studies and demonstrations as appropriate. After a technology meets the initial program requirements for rebates, further information must be gathered on the technology's energy savings performance in order to provide the CPUC-required Work Paper that will be used to support energy savings claims.



Appendix 5

Appendix 5: Supplemental TRIP Details

The intent of TRIP is to find, fund, and field test new energy efficiency or IDSM (combined Energy Efficiency and Demand Response) emerging technologies and delivery approaches that are discovered through the marketplace and PG&E's Technology Resource Innovation Outreach (TRIO) activities.

The TRIP will support the adoption of new measures while supporting energy efficiency programs in achieving the CPUC's energy savings and demand reduction goals. The program aims to achieve greater market adoption of new technologies through customer incentives, information/education, and technical assistance to help overcome market barriers to adopting new energy efficiency measures. PG&E ETP will meet its TRIP goal through the innovation portion of IDEEA365 by encouraging the market adoption of new and emerging technologies through third party offerings. The tactic includes moving promising technologies from development stage quickly into the commercial marketplace.

1. Approach to the Work– 35%
<p>In judging the Approach to Work of the Bidder, PG&E will evaluate, at a minimum, the following criteria:</p> <ul style="list-style-type: none">• The individual components of the Program design (e.g., staffing plan, marketing plan effectiveness, work plan, and timeline, etc.) and how the components contribute towards the potential success of the implementation of the Program;• The Bidder's overall understanding of what is required to accomplish the Program's deliverables and goals;• The Bidder's strategies to overcome market barriers and customer hurdles to installing Measures; and• The Program design incorporating one or more of the five (5) Innovation categories of the RFP and incorporates best practices.
2. Program Cost Effectiveness – 30%
<p>In judging the Program's cost effectiveness, PG&E will evaluate the first-year costs versus first-year energy savings, levelized cost, TRC, and PAC.</p>
3. Skill and Experience – 25%

Appendix 5

In judging the skill and experience of the Bidder, PG&E will evaluate, at a minimum, the following:

- That the Bidder has successfully (based on goals and budgets versus actual results) implemented a Program with similar breadth and scope (same end-uses and technical skill set);
- The degree to which the Program concept and implementation have been successful in the past;
- The team's overall relevant experience; and
- That the team has identified and presented the required licenses, insurance, and financial information required to complete the work.

4. Supplier Responsibility– 10%

PG&E encourages working with women, minority, and disabled veteran owned business (WMDVBEs) while continuing to purchase quality goods and service at competitive prices. Therefore, as a company which may supply goods and/or services to PG&E, to the fullest extent possible and consistent with the efficient performance of a contract, PG&E encourages bidders to incorporate WMDVBE into their Proposals.

Any work done for PG&E must be performed in full compliance with all applicable laws, regulations and policies (e.g., environmental, safety, antitrust, and employment), and in accordance with high standards of ethical business conduct.

The awarded innovative IDEEA365 programs will be administered by the utility's EE program management staff that oversees the implementation of third party programs. The awarded programs will follow standard third party program policies and procedures. PG&E proposes to pay incentives directly to the customer. The determination of customer incentives levels will vary depending on the technology. Typically, the customer incentives will be consistent with like measures offered through the statewide programs. PG&E will also consider the cost effectiveness analysis of the measure and the overall program in determining a customer incentive level.

The proposed 2013-2014 TRIP budget is \$3.184 million statewide. The TRIP program focuses on market adoption of new and emerging technologies as part of the statewide ETP activities. The administration of PG&E's TRIP-third party programs will be managed by PG&E program staff who are most familiar with managing third party program implementers. The proposed budget for the PG&E's TRIP activities is contained within the Third Party Program.

Appendix 6

Appendix 6: Supplemental Plug Load Activity Details

In the 2010-2012 cycle, the ET program engaged in various whole-building efforts that demonstrated how integrated building design is conducted. These efforts included collaborating with internal and external groups such as the Demand Response's Emerging Markets & Technology Program, the U.S. Department of Energy's, interfacing with EM&V efforts and several other EE programs. PG&E conducted ten in-depth ZNE consultations all focused on aspects of whole building performance including integrated building design and whole building performance validation. Example validation projects include a detailed monitoring plan for the UC Davis West Village development, ongoing work at the "Cottle House" in San Jose, and the "Sweetwater" project in Sonoma (a small community providing living choices for adults with autism). Example integrated design projects include a 37 story residential high rise in Oakland with a high efficiency façade designed to reduce or eliminate traditional the air conditioning system typical in such buildings, and, a large (2000 unit) proposed housing development in the Sacramento area in which various community scale options for district systems were optimized for highly efficient housing units. In the 2013-2014 application, ET will continue to develop whole-building efforts such as those described above, including ongoing monitoring of the existing five projects, support deep energy reduction goals as described in the Zero Net Energy Big Bold Goals. The ongoing monitoring efforts of the high-performance buildings will provide new information on needed to address all cost-effective measures including plug-loads, occupant behavior, energy/load management strategies, HVAC, etc. The lessons learned from the integrated design consultations will be developed into case studies to be broadly disseminated through the energy centers, Web sites and other venues; likewise, these lessons will be developed and integrated into the instruments of service and program logic of Whole Building Performance program efforts.

Specific to plug-loads and in collaboration with other internal and external stakeholders, the program will continue to address plug loads from both energy efficiency and energy management perspectives. For example, PG&E ET will explore opportunities to improve the efficiency of plug loads in the home including set top boxes, advanced power strips, game consoles, and computer graphics cards while identifying innovative ways to manage stand-by power consumption while minimizing customer impacts in their interactions with those plug-load devices. PG&E's ETP and Codes and Standards teams will work closely to identify product roadmaps connecting emerging technologies, program offerings, and proposed codes related to plug-load initiatives.

Appendix 7

Appendix 7: Residential and Commercial Roadmap Details

The intent of the residential and commercial roadmaps is to outline steps that ETP can take to advance CEESP objectives. The scope of work for the roadmaps has not yet been developed, but will likely include research and alignment with applicable past efforts, such as market research and saturation studies. There will be close coordination with all relevant current and planned efforts, internal or external to IOUs efforts (e.g., the 2013-2014 market assessments that will be planned through the joint ED/IOU EM&V group). A market actors study is currently under way and expected to conclude in early 2013. This study will be used to identify key stakeholders in Research, Development, Demonstration, and Deployment (RDD&D) that can be engaged during the process of developing the roadmaps.

The statewide ET Program expects that the development of roadmaps will require close coordination with other similar planned or ongoing efforts that EE programs, regional players, and/or stakeholders are involved in. ETP envisions the following timeline for the development of the budget and scope:

- 1) Develop general scope and solicit bids - Q1 2013
- 2) Review bids and award - Q2 2013
- 3) Roadmap activities - Q2 to Q3 2013
- 4) Complete work by Q4 2013

A final budget will be determined in conjunction with finalizing the scope of work.